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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,327

05/03/2007

Katsutoshi Nonaka

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EXAMINER

NGUYEN, SANG H

ART UNIT

PAPER NUMBER

2886

MAIL DATE

DELIVERY MODE

04/28/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/586,327	NONAKA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Sang Nguyen	2886	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/03/07 &amp; 07/14/06</u> .                                 | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on 05/03/07 & 07/14/06 has been entered. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-4, 6-7, 10-13, and 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Phillips (U.S. Patent No. 3,906,520).**

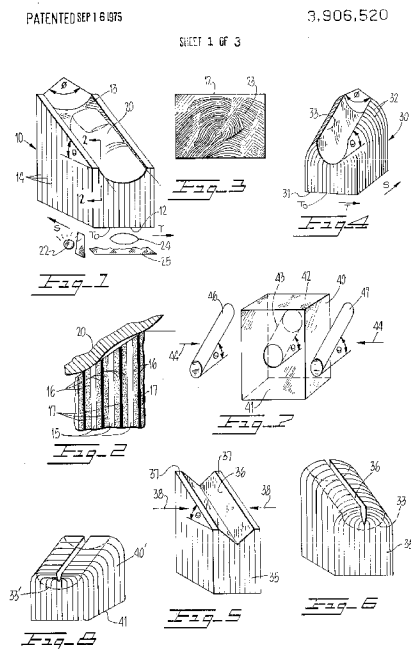
**Regarding claims 1 and 11;** Phillips discloses a curved surface shape inspection method and apparatus, comprising the steps of:

providing a fiber optic block (i.e., fiber optic imaging block [10 of figure 1]) formed by bundling and integrating a plurality of optical fibers (15 of figure 2), each of the plurality of optical fiber (15 of figures 1-2) composed of a core region (i.e., OTI DBF 69 core glass [col.4 lines 6-9]) and a clad region (16 of figure 1 or col.4 lines 6-9) surrounding the core region, an at least partially curved input end face (i.e., a concave

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surface [13 of figure 1]) of the fiber optic block (10 of figure 1) composed of one end (i.e., planar surface [12 of figure 1]) of each optical fiber (figures 1-10) and a measurement surface (13 of figure 1) having a curved surface shape of a to-be-measured object (20 of figure 1) are pressed against each other, and

providing an optical image (23 of figure 3) formed by bringing the input end face (12 of figures 1-3) into contact with the measurement surface (13 of figure 1) and output from an output end face of the fiber optic block (10 of figure 1) that is positioned on the opposite side to the input end face (12 of figure 1) is used to inspect the curved surface shape of the to-be-measured object (20 of figure 1). See figures 1-18.



**Regarding claim 2;** Phillips discloses the measurement surface (36 of figure 5) is an inner surface of a groove (figure 5) included in the to-be-measured object (20 of

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figure 1) and the optical image (23 of figure 5) includes two contact portion images (37, 38 of figure 5) corresponding to the two respective contact portions of the input end face and the measurement surface (36 of figure 5) and wherein a distance between the two contact portion images (figures 1 and 4-5) is measured to inspect the curved surface shape of the to-be-measured object (20 of figure 1).

**Regarding claim 3;** Phillips discloses imaging means (60, 62 of figure 15-16) is used to take the optical image (24 of figure 15).

**Regarding claims 4 and 13;** Phillips discloses the fiber optic block (10 of figure 1) has a predetermined region (figure 2) including the output end face (12 of figure 1) in which a light absorber (17 of figure 2) for absorbing light is provided in such a manner as to surround the clad region (16 of figure 2) in each optical fiber (15 of figure 2).

**Regarding claim 6;** Phillips discloses the input end face (72 of figure 17) and the measurement surface (33 of figure 17) are pressed against each other across a film (78 of figure 17) with translucency, and the optical image output from the output end face (72 of figures 17-18) is used to inspect the curved surface shape of the to-be-measured object (20 of figure 1).

**Regarding claims 7 and 15;** Phillips discloses an inspection pattern provided on the output end face (31 of figure 15) is compared with the optical image to inspect the curved surface shape of the to-be-measured object (33 of figures 13-16).

**Regarding claim 10;** Phillips discloses the position of at least one of the fiber optic block (10 of figure 1) the to-be-measured object (20 of figure 1) is adjusted so that

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the optical image (figure 1) is positioned within a predetermined range of a positioning provided on the output end face (figures 1-12).

**Regarding claim 12;** Phillips discloses the input end face (13 of figure 1 and 33 of figure 4) has a semispherical shape.

**Regarding claim 16;** Phillips discloses a positioning pattern (62 of figure 15-16) for adjusting the position with respect to the to-be-measured object is provided on the output end face (31 of figure 15).

**Regarding claim 17;** Phillips discloses the plurality of optical fibers (15 of figure 2) is bundled into a hollow shape (figure 2).

**Regarding claim 18;** Phillips discloses imaging means (i.e., light sensitive image transmission device [25 of figure 1 and col.4 lines 27-31]) provided in such a manner as to face the output end face (12 of figure 1) of the fiber optic block (10 of figure 1) and adapted to take an optical image (24 of figure 1) output from the output end face (12 of figure 1).

**Regarding claim 19;** Phillips discloses further comprising illuminating means (22 of figure 1) provided in such a manner as to face the input end face and adapted to illuminate the input end face (13, 20 of figure 1).

**Regarding claim 20;** Phillips discloses further comprising a lens system (24 of figure 1) arranged between the output end face (12 of figure 1) and the imaging means (25 of figure 1) and adapted to input the optical image to the imaging means (25 of figure 1).

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 5, 8-9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips (U.S. Patent No. 3,906,520) in view of Matsushita (U.S. Patent No. 4,113,353).**

**Regarding claims 5 and 14;** Phillips discloses the difference in refractive index between the core region and the clad region in each optical fiber (col.3 lines 52-67). Phillips discloses all of features of claimed invention except for difference refractive index between the core region and the clad region in each optical fiber is smaller in the predetermined region than at the input end face. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine method and apparatus of Phillips with difference refractive index between the core region and the clad region in each optical fiber is smaller in the predetermined region than at the

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input end face, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

**Regarding claims 8-9;** Phillips discloses all of features of claimed invention except for luminescent liquid or scatter liquid for producing luminescence is applied to the measurement surface and the measurement surface with the luminescent liquid (or scatter liquid) applied thereto and the input end face are pressed against each other, and the optical image output from the output end face is used to inspect the curved surface shape of the to-be-measured object. However, Matsushita teaches that it is known in the art to provide luminescent liquid or scatter liquid for producing luminescence is applied to the measurement surface and the measurement surface with the luminescent liquid (or scatter liquid) applied thereto and the input end face are pressed against each other, and the optical image output from the output end face is used to inspect the curved surface shape of the to-be-measured object (col.1 lines 9-27 and col.2 lines 20-37 and figures 46-47 and 50). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine method and apparatus of Phillips with luminescent liquid (or scatter liquid) for producing luminescence is applied to the measurement surface and the measurement surface with the luminescent liquid (or scatter liquid) applied thereto and the input end face are pressed against each other, and the optical image output from the output end face is used to inspect the curved surface shape of the to-be-measured object as taught by



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Matsushita for the purpose of improving inspection measurement surface object with high resolution and low cost in manufacturing and high reliability system.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lanier Jr. et al (7448991); Woodberry (6885203); Sugawara et al (5808729); Shapanus et al (5764823); Polaert (4911528) ; Dowling et al (4785171) ; Phillips et al (3864939).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Nguyen whose telephone number is (571) 272-2425. The examiner can normally be reached on 9:30 am to 7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifur Chowdhury can be reached on (571) 272-2800 ext. 86. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

April 25, 2009

/Sang Nguyen/

Primary Examiner, Art Unit 2886